CORRECTED VERSION

(19) World Intellectual Property Organization

International Bureau



| 18419 | 1771971 | 7 | 1847 | 1847 | 1847 | 1847 | 1847 | 1847 | 1847 | 1847 | 1847 | 1847 | 1847 | 1847 | 1848 | 1848 | 1847 |

(43) International Publication Date 17 March 2005 (17.03.2005)

PCT

(10) International Publication Number WO 2005/024088 A3

- (51) International Patent Classification7: C23C 14/22, 14/56
- (21) International Application Number:

PCT/IB2004/002960

(22) International Filing Date:

10 September 2004 (10.09.2004)

(25) Filing Language:

Italian

(26) Publication Language:

English

(30) Priority Data: TO2003A000690

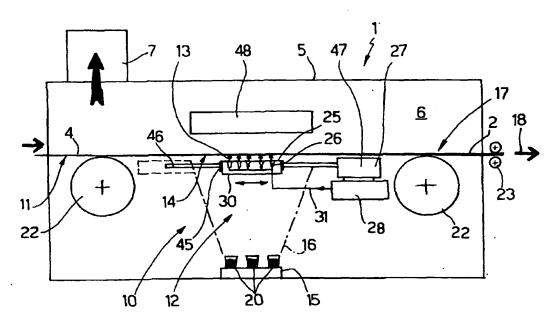
11 September 2003 (11.09.2003)

(71) Applicants (for all designated States except US): EDI-SON S.P.A. [IT/IT]; Foro Buonaparte, 31, I-20121 Milano (IT). OUTOKUMPU COPPER SUPERCONDUC-TORS ITALY S.P.A. [IT/IT]; Via della Repubblica, 257, I-55052 Fornaci di Barga (IT).

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): BALDINI, Alberto [IT/IT]; Via del Palmierino, 1, I-50137 Firenze (IT). GAUZZI, Andrea [IT/IT]; Viale Vittoria, 13, I-43100 Parma (IT). ZANNELLA, Sergio [IT/IT]; Via dei Platani, 7, I-22066 Mariano Comense (IT).
- (74) Agents: CERBARO, Elena et al.; Studio Torta S.r.l., Via Viotti, 9, I-10121 Torino (IT).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: A METHOD AND APPARATUS FOR DEPOSITION OF FILMS OF COATING MATERIALS, IN PARTICULAR OF SUPERCONDUCTIVE OXIDES



(57) Abstract: There are provided herein a method and an apparatus for deposition of films of coating materials on a substrate, of particular use in obtaining superconductive composite tapes for deposition of films of superconductive oxides and/or buffer layers. A step of deposition of the film (2) on the substrate (4) is associated to a step of gas treatment in situ, in which a flow (13) of gas is sent towards a working surface (14) of the substrate or of the film growing on the substrate. The gas-treatment step is performed via ultrasoundexpansion nozzles (26).





(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ,

EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- with international search report
- (88) Date of publication of the international search report: 11 August 2005
- (48) Date of publication of this corrected version: 1 December 2005
- (15) Information about Correction: see PCT Gazette No. 48/2005 of 1 December 2005, Section II

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.